Where in the World? Demographic Patterns in Access Data

Mimi Recker, Beijie Xu, Christine Garrard, *Utah State University*
Sherry Hsi, *Lawrence Hall of Science, UC Berkeley*

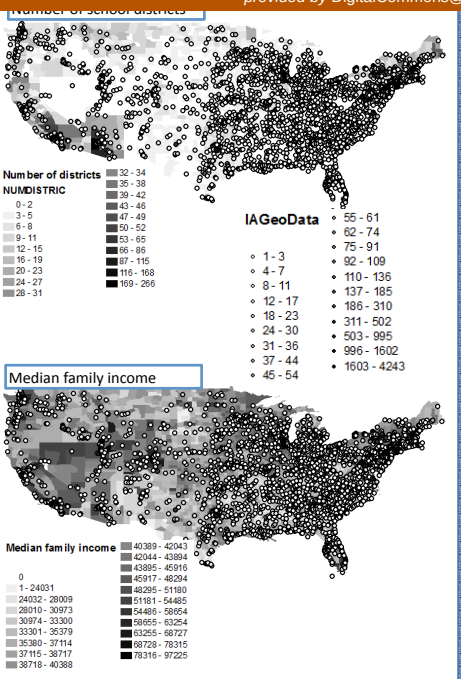
- A tool for collecting and reusing online learning resources
- Utah-based
- Outreach program in New York and Michigan

Exploratorium Learning Resources Collection (ELRC)

- A digital library of over 700 science activities and instructional resources
- Based on a hands-on museum in California

web-based educational systems.

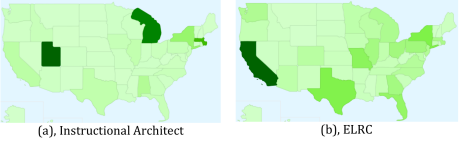
- Map geo-referenced data with public demographic datasets.
- Conduct statistical analyses of these relationships to highlight significance predictor variables.



Procedure

1. Track web metrics using Google Analytics.
2. Collect geo-referenced visits data.
3. Join and map geo-referenced data with public demographic datasets.
4. Analyze the association between the two.

Visits from the Contiguous US



(a), Instructional Architect (b), ELRC

- Both groups were successful in local dissemination activities.
- The ELRC also showed more widespread U.S. visitors.

Datasets

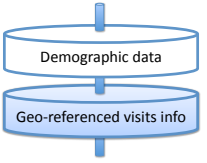
Geo-referenced data

- IA's Google Analytics report
- ELRC's Google Analytics report

Demographic data

- Per capita income
- Median family income
- Number of schools
- Number of school districts
- Population

Mapping Data



State	State visits	City	City visits	County name	schools	school districts	percapita income	median family income
New York	2791	New York	670	NEW YORK	1451	30	42922	50229
California	8268	Los Angeles	596	LOS ANGELES	2037	97	20683	46452
Missouri	1354	Seymour	559	WEBSTER	17	5	14502	36934
Texas	2698	San Antonio	191	BEXAR	491	41	18363	43724
California	8268	San Francisco	189	SAN FRANCISCO	123	3	34556	63545
Pennsylvani	1764	Philadelphia	179	PHILADELPHIA	328	57	16509	37036
Florida	2238	Miami	165	MIAMI-DADE	456	1	18497	40260
California	8268	Piedmont	147	ALAMEDA	410	27	26680	65857
Colorado	875	Boulder	140	BOULDER	99	3	28976	70572
Ohio	1572	Columbus	142	FRANKLIN	386	77	23059	53905
Illinois	1612	Chicago	141	COOK	1311	168	23227	53784
Indiana	769	Indianapolis	138	MARION	234	35	21789	49387
California	8268	Oakland	132	ALAMEDA	410	27	26680	65857
Pennsylvani	1764	Pittsburgh	129	ALLEGHENY	335	65	22491	49815
California	8268	Fresno	121	FRESNO	340	37	15495	38455
Florida	2238	Jacksonville	120	DUVAL	177	2	20753	47689
California	8268	Alameda	119	ALAMEDA	410	27	26680	65857
Texas	2698	Houston	111	HARRIS	974	72	21435	49004
California	8268	Lancaster	90	LOS ANGELES	2037	97	20683	46452
California	8268	Santa Rosa	87	SONOMA	184	42	25724	61921

Statistical Analysis

- Used negative binomial regression to account for skewed data.
- Dependent Variable:
  - Number of visits
- Three independent variables:
  - Population
  - Number of school districts
  - Per capita income

	population		school districts		per capita income	
	Wald chi-square	p-value	Wald chi-square	p-value	Wald chi-square	p-value
IA	**190.18**	**.000**	.63	.43	**27.57**	**.000**
ELRC	**71.36**	**.000**	**6.96**	**.008**	**11.70**	**.001**

- Population density significantly predicted number of online visitors.
- Per capita income also significantly predicted number of online visitors. This may be a function of the amount of resources (e.g., computers) available in the local schools and communities.

This material is based in part upon work supported by the National Science Foundation under Grant Number 840738 & 0840745. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.